

Packaging and Transportation

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Los Alamos National Laboratory

Laboratory Implementation Requirements LIR 405-10-01.2

Original Issue Date: 08/01/98 (Revised: xx/xx/03)

Mandatory Document

1.0 Introduction

Lessons Learned Note: [click here](#) for lessons Learned that may apply to the requirements contained in this LIR

1.1 Overview All Laboratory packaging and transportation activities shall meet safety expectations, quality assurance requirements, DOE orders, and relevant local, state, and federal law. The contents of this document shall be effective on the issue date of this LIR, and Notice 115, SECON, will be superceded by this LIR upon its issue date.

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2.0 Purpose

This document contains the requirements that shall be implemented for controlling on-site and off-site packaging and transportation activities to ensure quality, safety, and regulatory requirements are met.

3.0 Scope/Applicability

The requirements and guidance contained in this document shall apply to:

- all Laboratory employees and organizations,
 - contractor and subcontractor employees, and
 - visitors who perform on-site, or off-site packaging and transportation activities for the Laboratory at the expense of the Department of Energy or any other agency providing funding for projects or programs managed or performed by the Laboratory.
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4.0 Definitions

[Packaging and Transportation Glossary of Definitions and Acronyms \[Click Here\]](#)

Hazmat Hazardous materials, substances, and wastes that are regulated for transportation by the DOT. Definitions are contained in [49 CFR, Subtitle B, Chapter I, Subchapter C, Part 171](#).

5.0 Precautions and Limitations

5.1 Exclusions **Guidance Note:** This LIR does not include the transfer of general commodities or hazmat within buildings or when handcarried or moved using a non-motorized method of transfer between buildings within site boundaries.

Facility managers shall address personnel safety and protection during these types of activities by ensuring that they are performed within the controls established by the site's approved safety basis, and shall define, analyze, control, perform, and evaluate each activity by implementing the Laboratory's Safe Work Practice requirements, (see [LIR 300-00-01, Safe Work Practices](#) and [LIR 300-00-02 Documentation of Safe Work Practices](#), to develop and document hazard control plans and procedures that are required to ensure a level of safety equivalent to that prescribed by [49 CFR, Parts 100 to 185](#) at URL: <http://www.access.gpo.gov/cgi-bin/cfrassemble.cgi?title=199649>).

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5.2 Price Anderson Amendments Act Applicability

Requirements for radioactive material transfers shall be subject to Price Anderson Amendments Act enforcement. The requirements of 10 CFR 830.120, "Quality Assurance," and 10 CFR 835, "Occupational Radiation Protection," shall apply to radioactive material transfers and provide the basis for enforcing the Price Anderson Amendments Act.

Guidance Note: Failure to adhere to these CFR requirements can result in violations, enforcement notices, and other penalties.

5.3 Transportation of Defense Program Materials (DPM)

Defense program materials shall be prepared and transferred according to requirements approved by the cognizant NNSA Service Center National Security Department Manager. DPM procedures shall establish the foundation for LANL self-appraisals of the on-site transfer of nuclear explosives and the on-site packaging and transfer of special nuclear material, nuclear components, and special assemblies meeting the DOE standards contained in the documents identified in Section 10.3 of this LIR, References 1 and 4. Nuclear explosives shall be transferred on-site using handling equipment specified and approved through a [DOE Order 452.2A Nuclear Explosive Safety Study](http://www.directives.doe.gov/) [http://www.directives.doe.gov/]. Special assemblies shall be permanently marked as specified in Reference 1, Section 10.3, of this LIR, and transferred on-site using hazard control plans or requirements generated according to the Safe Work Practices process.

6.0 Roles and Responsibilities

The required roles and responsibilities for managing the LANL P&T Program shall be as stated in [Chapter 4 of OST-405-10-01, LANL Transportation Safety Document \(TSD\)](#).

The overall responsibilities for implementing the requirements set forth in this LIR are covered in the table below.

LANL Director and Associate Directors	Shall: <ul style="list-style-type: none">• Have the overall responsibility for the LANL P&T Program.• Be cognizant of the requirements contained in this LIR, and how these requirements affect the operations of the organizations for which they are responsible.• Ensure that all Division Leaders are aware of P&T requirements that apply to Hazmat transfers/shipments originating within their respective organizations.
Division Leaders	Shall: <ul style="list-style-type: none">• Be cognizant of the requirements contained in this LIR, and how these requirements affect the operations of the organizations for which they are responsible.• Ensure that all Group Leaders are aware of P&T requirements that apply to Hazmat transfers/shipments originating within their respective organizations.

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Facility Manager	<p><u>Shall:</u></p> <ul style="list-style-type: none">• address packaging and transportation activities within the site boundaries in the approved safety basis documentation.• ensure that packaging and transportation activities within the site boundaries are performed within the controls established by the site's approved safety basis.
Group Leaders	<p><u>Shall:</u></p> <ul style="list-style-type: none">• Be cognizant of the requirements contained in this LIR and OST 405-10-01, LANL Transportation Safety Document, and how these requirements affect the operations for which they are responsible.• Authorize only trained and qualified workers and drivers to perform packaging and transportation activities. <p>Guidance Note: Training courses that are available at LANL to fulfill these requirements are located at: http://int.lanl.gov/training/esh.shtml</p> <ul style="list-style-type: none">• Implement a quality assurance program that includes packaging and transportation activities.• Review and approve group Hazmat packaging and transportation Hazard Control Plans, requirements, work instructions, and checklists.• Ensure that workers have function-specific training covering site specific requirements, work instructions, and checklists.• Perform and document management assessments of P&T activities.• Report required performance data to P&T PT as required by the Laboratory's Performance Indicator Program.

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P&T PT	<p><u>Shall:</u></p> <ul style="list-style-type: none">• Work with LANL organizations to ensure that Hazmat is packaged, labeled, marked, and transported in accordance with all requirements, regulations, and procedures that apply to the material being transferred.• Maintain the requirements contained in this LIR and ensure that they are being implemented by performing quarterly surveillances at selected organizations across LANL, and by reviewing the performance data provided by the organizations as a part of the Laboratory Performance Indicator Program.• Work with organizations to coordinate and manage the development and design of Type B packaging and the associated Safety Analysis Report for Packaging (SARP).• Develop and maintain OST 405-10-01, LANL TSD.• Evaluate and approve transfers of nuclear material for which no authorized packaging exists or is reasonably available.• Develop and implement requirements for P&T activities at LANL.• Interface with DOE LASO and local officials in the performance of P&T activities.• Perform packaging engineering, testing, and specification development for Hazmat materials packaging.• Implement the USQ process for P&T.• Interface with the DOE, the DOT, the US NRC, DOE contractors, the State of New Mexico, and Los Alamos County on issues related to P&T regulations and activities.• Qualify commercial drivers and maintain LANL Driver Qualification Files and Driver Time Logs.
SNM/SST Team	<ul style="list-style-type: none">• Schedule and perform transfers according to established LANL requirements.• Ensure the safety of nuclear materials after they are loaded onto the BUS-4 government owned vehicle (GOV) until the vehicle arrives at the destination.

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Worker	<p>Shall:</p> <ul style="list-style-type: none">• Package, mark, label, and document Hazmat transfers/shipments as required by DOT.• Ensure that loading/unloading operations are conducted safely and according to written requirements.• Contact P&T PT to arrange for the transfer of nuclear material for which no authorized packaging exists or is not reasonably available.• Load, block, brace, and tie-down Hazmat or Non-Hazmat materials in accordance with Title 49 CFR Parts 392.9, Parts 393, and 177 Subpart B, Parts 393.100 through 393.106 [can be found at URL: http://www.access.gpo.gov/cgi-bin/cfrassemble.cgi?title=199649], or specific requirements identified in OST 405-10-01, LANL TSD. Ensure that only authorized driver's transport materials (Hazmat/Non-Hazmat) using commercial motor vehicles in accordance with FMCSR Parts 393 and Parts 396 .• Maintain reusable packaging according to the test documentation, or the SARP for Type B or DPM radioactive material packaging.• Ensure that Hazmat packaging is procured in accordance with the requirements of the Procurement Quality LIR 308-00-0.• Ensure that all specifications for Hazmat packaging, including Type A and Type B radioactive material packaging, is reviewed and approved by P&T PT prior to placement of the order. <p>Guidance Note: Many Hazmat packaging specifications have already been developed and approved by BUS-4 for use at LANL, go to URL: http://businternal.lanl.gov/bus4/transport/pe/procurement_spec.htm</p> <ul style="list-style-type: none">• Ensure that receipt inspections are performed and documented on Hazmat packaging by qualified receipt inspection personnel.• Ensure that non-conformances are documented and managed to closure as defined by the organization's quality assurance program, and that these records are available for review as a part of the P&T PT's surveillance program.• Work with P&T PT on any Type B packaging design and development activities.• Contact P&T PT for instructions and approval to decommission Hazmat packaging.
BUS Contract Administrators	<p>Shall:</p> <ul style="list-style-type: none">• Ensure that requesters have included quality assurance requirements (such as: Quality Assurance Supplemental Form 838c, receipt inspection and acceptance criteria, etc.) in their procurement requests in accordance with the Procurement Quality LIR 308-00-04 [Click Here], and that the quality assurance requirements are specified in the procurement contract.• Ensure that P&T PT has approved the procurement specification provided by the requester for the procurement of Hazmat.• Ensure that the procurement is placed with qualified vendors/suppliers listed at http://businternal.lanl.gov/bus4/transport/pe/asl_intro.htm.

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PS-1 Quality Management Support	<u>Shall:</u> <ul style="list-style-type: none">• Provide receipt inspection services by qualified and authorized personnel for Hazmat packagings upon request.• Provide an updated list of qualified vendors/suppliers.
HSR-2 Occupational Medicine	<u>Shall:</u> <ul style="list-style-type: none">• Perform Physical Examinations in accordance with DOT requirements to determine driver fitness to operate a commercial motor vehicle (CMV) in accordance with Title 49 CFR Part 391 Subpart E, URL: <u>http://www.access.gpo.gov/cgi-bin/cfrassemble.cgi?title=199649</u>• Issue medical examiners certificates to drivers and forward a copy to P&T FMCC Office for placement in the Driver's Qualification File.• Serve as LANL's Medical Review Officer (MRO) to review laboratory results generated by LANL's drug testing program (S-6 PSAP), and review and interpret confirmed positive test results, in conjunction with the driver's medical history and any other relevant biomedical information. A copy of reviewed laboratory results shall be forwarded to P&T FMCC Office.
S-6 (PSAP) Office	<u>Shall:</u> <ul style="list-style-type: none">• Establish and administer the LANL DOT Drug and Alcohol Program in accordance with FMCSR Part 40 and 382.

7.0 Packaging and Transportation Implementation Requirements

7.1 Packaging Quality Assurance

The following sections contain specific quality assurance requirements that must be implemented for hazmat packaging.

7.1.1 Procurement Requirements	The Organization Shall Procure Hazmat Packaging and Components as follows: <ul style="list-style-type: none">• Hazmat packaging shall be procured in accordance with the requirements contained in the Procurement Quality LIR 308-00-04 [Click Here].• All specifications for Hazmat, including Type A and Type B radioactive material packaging, shall be reviewed and approved by P&T PT.• Purchase cards shall not be used to procure packaging systems and components for hazardous materials.• Radioactive materials packaging system and components shall not be purchased from JIT vendors, and shall only be procured using a purchase order and by implementing the requirements contained in Procurement Quality LIR 308-00-04 [Click Here], and only from qualified vendors listed at http://businternal.lanl.gov/bus4/transport/pe/asl_intro.htm• Qualified personnel shall perform a documented receipt inspection on Hazmat packaging.• Inspected packaging and components shall be segregated to ensure that only Hazmat packagings meeting all designated quality assurance requirements are used.
7.1.2 Design, Development, and De- commissioning Requirements	Design, Development, and Decommissioning of Hazmat Packaging: <ul style="list-style-type: none">• Organizations shall work with P&T PT on any Hazmat packaging design and development activities, including Type B packaging design and development activities (SARP development activities).• Organizations shall contact P&T PT for instructions and approval to decommission Hazmat packaging.
7.1.3 Maintenance and Inspection Requirements	Maintenance and Inspection of Hazmat Packaging Before Use: <ul style="list-style-type: none">• Organizations shall document the inspection of all Hazmat packaging prior to use.• Organizations shall use calibrated tools for the closure of Hazmat packaging as required by the SARP or manufacturer's instructions.• Organizations shall perform and document the loading, closing, and preparation of Hazmat packages according to approved procedures or manufacturer's instructions.
7.1.4 Non- Conformance Reporting Requirements	Non-Conformance Reporting: <p>Organizations shall have a method to document and manage P&T non-conformances.</p>

7.2 Transportation of Hazardous Materials

- All on-site and off-site transfers of Hazmat shall be packaged and transported in accordance with DOT requirements.
- When DOT requirements cannot be met for radioactive material transfers for which no authorized packaging exists, or is reasonably available, the requirements contained in [OST 405-10-01, LANL TSD](#), must be implemented (see Section 7.3 below).
- On-site and off-site transfers of Hazmat shall be packaged and transported by trained and qualified workers and drivers who have been authorized by their group leader to conduct packaging and transportation activities.

Guidance Note: Training courses available at LANL located at:
<http://int.lanl.gov/training/esh.shtml>

- On-site transfers of Hazmat (excluding radioactive materials) shall be documented on a Hazardous Materials Transfer Form #1468 (HMTF)
<http://enterprise.lanl.gov/esh.htm>
- On-site transfers of radioactive material (excluding excepted packages for limited quantities 49 CFR 173.421-428) shall be documented on a Radioactive Materials Transfer Form #1586 (RMTF) <http://enterprise.lanl.gov/esh.htm>

Guidance Note: Other types of shipping papers are allowable as long as they meet the requirements of 49 CFR, Part 172, Subpart C.. For example, the Uniform Hazardous Waste Form (EPA Form #8700-22) is used at LANL by some LANL groups to move hazardous mixed waste, and a TRU Waste Manifest is used to move TRU Waste.

- On-site and off-site transfers of Empty Radioactive Packaging (49 CFR 173.428) shall be documented on a Certification for Empty Radioactive Material Packaging Form #1458 <http://enterprise.lanl.gov/esh.htm>
- Off-site shipments of all Hazmat shall be documented on a Shipping Request #1768 <http://businternal.lanl.gov/bus4/transport/srform.htm>

Hazmat shall not be:

- transported via private vehicle on-site, or off-site.
- handcarried in any motorized vehicle on-site or off-site, unless in accordance with DOT requirements.
- transported or handcarried on any passenger-carrying or private aircraft; therefore, arrangements shall be made through BUS-4 for any hazmat required for work off-site to be shipped to the work destination in accordance with DOT requirements, using an approved transport carrier.

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7.3 Transfers of Radioactive Material for which No Authorized Packaging Exists or is Reasonably Available

P&T PT shall be contacted to arrange for the transfer of radioactive material for which no authorized packaging exists or is not reasonably available. These transfers shall be conducted in accordance with the requirements contained in [OST 405-10-01, LANL TSD](#).

Organizations that perform these types of transfers shall enter into a written formal agreement with P&T PT to ensure that the required safety basis ([OST 405-10-01, LANL TSD](#)), roles and responsibilities, training requirements, and procedures are clearly defined and understood by all parties involved.

7.4 SECON

Specific restrictions, limitations, and prohibitions to on-site transfers and off-site shipments of hazmat are required during heightened security conditions according to the [Heightened SECON Transport Guidance Table](#).

The general requirements that shall be implemented when SECON Levels are in effect are given in the table below.

Person/Organization	Shall...
Worker (at requesting organization)	<ul style="list-style-type: none">Complete the “Heightened Security Transport Request” form (BUS4-FORM-008). Guidance Note: Page 2 of the “Heightened Security Transport Request” form contains additional information to determine whether the request form is required.Submit the completed transport request form to his/her manager for approval.Ensure the responsible Division Leader signs the “Heightened Security Transport Request” form for NM/SNM Categories I-IV going off-site and fax to BUS-4 at 667-0981Fax the completed and signed “Heightened Security Transport Request” form to BUS-4 (7-0981).Schedule a transfer time with the BUS-4 Packaging and Transportation Team when the transfer has been approved.
Responsible manager (of requesting organization)	Review the completed “ Heightened Security Transport Request ” form for approval.
Materials Management (BUS-4) Group Office	<ul style="list-style-type: none">Ensure the data from the “Heightened Security Transport Request” form is entered in the internal database.Fax the completed “Heightened Security Transport Request” form to the Security Integration group (S-2), Fax No. 667-3388.Notify the requesting organization by fax when the request is approved.

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Security Integration Group (S-2)	<ul style="list-style-type: none">• Review transfer requests for approval• Coordinate transfer requests with LASO for approval if required.• Fax approval or non-approval "Heightened Security Transport Request" form to both the BUS-4 Group Office Fax 667-0981 and the point of contact at the requesting organization.
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7.5 Transfers of Hazmat Within Facility Site Boundaries

- Hazmat transfers moving within a Facility's site boundary (Example: material moving from one building to another behind the fence at TA-55) shall be prepared to control hazards presented during loading, off-loading, and transport according to that Facility's approved safety basis and approved procedures.
- Transfers between Facilities that are operated under different approved safety bases, but are all within the same site boundary (Example: TA-08, 09, 11, 14, 15, 16, 22, 40), shall be conducted in accordance with DOT, an approved safety basis that covers the transfer, or by implementing the requirements of [OST 405-10-01, LANL TSD](#) (see Section 7.3).

7.6 Vehicle and Operator Requirements for all Materials On-Site and Off-Site

Vehicle and operators/drivers used for off-site or on-site transfers shall be qualified in accordance with FMCSR safety requirements contained in Title 49 CFR Parts 350 through 399 except parts 367 (State Registration) and Part 387 (Financial Liability).

Maximum driving time limitations shall apply to both on-site and off-site hours of service.

- On-site driver's driving hours shall be tracked through regular time reporting or by completing the 100 air mile radius "Drivers Exemption Logs". Regardless of the reporting method the forms shall be forwarded to P&T FMCC Office.
 - Off-site driver's driving shall include any on-site driving activities into their total driving hours and shall maintain a "Drivers Record of Duty Status" log in accordance with FMCSR Part 395.8 requirements. Completed logs shall be forwarded to P&T FMCC Office.
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8.0 Performance Assessment Requirements

8.1 Performance Assessment

Assessment of the implementation of the requirements contained in this LIR shall be performed through a variety of assessment methodologies as stated below:

- Management assessments shall be performed by the affected managers according to the requirements contained in [the Management Safety Walk-Arounds LIR 307-01-03.1](#). The requirements of this LIR shall be the focus of at least one of the management safety walk-arounds annually. The results of this management assessment shall be made available to P&T PT during surveillances.
 - Quarterly surveillances shall be performed by BUS-4 Subject Matter Experts on selected Organizations across LANL to evaluate the completeness and effectiveness of the implementation of the requirements contained in this LIR.
 - The Laboratory's Audits and Assessment organization, the DOE, the DOT, and other external agencies shall perform Independent assessments according to established requirements.
 - Annual laboratory-wide self-assessments focusing on Packaging and Transportation shall be conducted by organizations that conduct P&T activities as required by the [Self-Assessment LIR 307-01-01](#).
 - Deficiencies identified through performance assessments shall be corrected by the responsible organizations in a timely manner, and documentation of completed corrective actions shall be forwarded to P&T PT.
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9.0 Required Records

9.1 General Records Management Requirements

P&T records shall be managed in accordance with the requirements [of LIR 308-00-02, Laboratory Records Management](#), per approved records retention schedules with guidance from IM-5 and your organizations Records Management Point of Contact. The following sections contain a list of the types of P&T records that shall be retained and managed.

9.1.1 Records Management Requirements for Laboratory Organizations

The following records shall be required:

- Inspection documentation for packaging materials and systems prior to use.
- Signed and completed checklists documenting preparation, packaging, closure, and tie-down processes for radioactive material transfers.
- Vehicle inspection and maintenance records.
- Training and qualification records for each P&T worker including function-specific records of the successful training on the packaging and closure process, and required tie-down, blocking, or bracing activities.
- Work authorization for the performance of P&T activities.
- Shipping papers for on-site and off-site hazardous materials packaging and transportation (HMPT) activities.
- Container design, testing, and maintenance records for packaging systems used.
- Procurement documents for packaging components and systems.
- Inspection and acceptance documentation for packaging materials and systems upon receipt at LANL.
- Filling and closure instructions, and any other support documentation for packaging systems used.

9.1.2 Records Management Requirements for BUS-4

The following records shall be required:

- Shipping papers for on-site and off-site LANL HMPT activities.
 - Container design, testing, and maintenance records for packaging systems procured and used by BUS-4.
 - Filling and closure instructions, and any other support documentation for packaging systems used.
 - Procurement documents for packaging components and systems purchased by BUS-4.
 - Inspection and acceptance documentation for packaging materials and systems procured by BUS-4.
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9.1.3 Records Management Requirements for P&T PT

The following records shall be required:

- Packaging vendor/supplier assessment and performance records.
 - Driver qualification files and drug/alcohol test records.
 - Driver's Hours of Service logs.
 - Container design, testing, and maintenance records for packaging systems designed, tested, and managed by LANL.
 - Safety Analysis Reports for Packaging (SARPs) for Type B packaging used at LANL.
 - SARPs and SARP development records for Type B Containers designed and developed by LANL.
 - Engineering drawings of products and packaging used by LANL as required.
 - Procurement specifications for packaging and packaging components.
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10.0 References

10.1 Document Ownership

The OIC responsible for developing, revising, and maintaining this document shall be the Packaging and Transportation Program Team (P&T PT).

10.2 Referrals

For P&T PT Contact Information go to URL:
<http://businternal.lanl.gov/bus4/transport/default.htm>

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1. 10 CFR 830.122, Quality Assurance
2. 10 CFR 835, Occupational Radiation Protection
3. 49 CFR, Parts 100 to 185, Transportation
4. 49 CFR, Parts 300 to 399, Federal Highway Administration, Department of Transportation
5. DOE Order 452.2A, Safety of Nuclear Explosive Operations, 1/17/97
6. DOE O 5610.12 Packaging and Off-site Transportation of Nuclear Components and Special Assemblies Associated with the Nuclear Explosive and Weapon Safety Program and AL SD 5610.12
7. DOE O 460.1a, Packaging and Transportation Safety, Attachment 1, Contractor Requirements Document
8. DOE O 460.2, Departmental Materials Transportation and Packaging Management
9. DOE O 5610.14, Transportation System Safeguard Operations
10. LIR300-00-01 Safe Work Practices
11. LIR300-00-02 Documentation of Safe Work Practices
12. LIR 308-00-04, Quality Procurement
13. LIR 307-01-03, Management Safety Walk-Arounds
14. LIR 308-00-02, Laboratory Records Management
15. LIR 307-01-01, Self-Assessment
16. OST 405-10-01, LANL Transportation Safety Document (TSD) (BUS4-SA-003)